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Claims

1. An apparatus for simultaneously monitoring an array of reaction sites for light indicating that a reaction
5 is taking place at a particular site, comprising an optically sensitive device arranged so that in use the light from a particular reaction site will impinge upon a particular predetermined region of said optically sensitive device, means for determining the light level
10 impinging upon each of said predetermined regions and means to record the variation of said light level with time for each of said reaction sites.
2. An apparatus for identifying a target base in a DNA
15 sequence comprising a plate having a plurality of reaction sites, an optically sensitive device arranged so that in use light from respective reaction sites signifying the incorporation of a nucleotide will impinge upon separate detection portions of said
20 optically sensitive device, means for determining the level of light impinging upon said separate detection portions, thereby indicating the level of light emitted from each reaction site, and means for recording the variation of light output from each of said reaction
25 sites with time.
3. An apparatus as claimed in claim 1 or 2, wherein the optically sensitive device comprises a single optical transducer.
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4. An apparatus as claimed in claim 1, 2 or 3, arranged to monitor the reaction sites from underneath.
5. An apparatus as claimed in any of claims 1 to 4,
35 comprising an array of lenses between, or arranged in use between, said reaction sites and the optically sensitive device.

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6. An apparatus as claimed in claim 5, wherein the lenses of said array are spaced by a smaller amount than the spacing of the corresponding reaction sites.
- 5 7. An apparatus as claimed in any preceding claim, wherein the optically sensitive device comprises a charge-coupled device.
- 10 8. An apparatus as claimed in claim 7, wherein the optically sensitive device comprises a frame transfer charge-coupled device.
- 15 9. An apparatus as claimed in any preceding claim, comprising means to record a measure of the total light output from a given reaction site.
- 20 10. An apparatus as claimed in any preceding claim, comprising means to convert the electrical output from said optically sensitive device into a digital signal.
11. An apparatus as claimed in claim 10, wherein said conversion means converts the signals from a plurality of neighbouring pixels in a single block.
- 25 12. An apparatus as claimed in any of claims 2 to 11, wherein said plate is in contact with heat regulating means.
- 30 13. An apparatus as claimed in any of claims 2 to 12, wherein masking means are provided between reaction sites on the plates.
- 35 14. A reaction medium comprising a plurality of reaction sites which are partially transparent at a lower part thereof, and opaque masking means between the reaction sites, said masking means being arranged so as to reduce the transmission of light between neighbouring

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reaction sites.

15. An apparatus or reaction medium as claimed in claim
13 or 14, wherein said masking means are provided by
5 channels in a block.

16. An apparatus or reaction medium as claimed in claim
15, wherein said block comprises temperature regulating
means.

10 17. An apparatus or reaction medium as claimed in claim
15 or 16, wherein said channels flare outwardly towards
the lower part thereof.

15 18. A method of identifying a target base in a DNA
sequence, comprising detecting the light level emitted
from a plurality of reaction sites on respective
portions of an optically sensitive device, converting
the light impinging upon each of said portions of said
20 optically sensitive device into an electrical signal
which is distinguishable from the signals from all of
said other regions, determining a light intensity for
each of said discrete regions from the corresponding
electrical signal, and recording the variations of said
25 electrical signals with time.

19. A method as claimed in claim 18, comprising
monitoring a plurality of reaction sites simultaneously.

30 20. A method as claimed in claim 18 or 19, wherein the
interval between successive readings of the state of the
optionally sensitive device is less than or equal to the
time between the addition of reagents to consecutive
reaction sites.